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JUNE 1952

SOIL CONSERVATION

OFFICIAL ORGAN OF THE SOIL CONSERVATION SERVICE

SOIL CONSERVATION •

JUNE—1952
VOL. XVII—NO. 11

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ISSUED BY SOIL CONSERVATION SERVICE, U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

★ THIS MONTH ★

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WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

SOIL CONSERVATION is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business, under approval (August 6, 1951) of the Director of the Budget. SOIL CONSERVATION supplies information for workers of the Department of Agriculture and others engaged in soil conservation.

15 CENTS PER COPY **$1.25 PER YEAR**

FOREIGN—$1.75 PER YEAR

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SOIL AND CROPS STAY HOME.—Control of wind erosion saved soil and resulted in crop-yield increases of more than 25 percent on the farm of Charles Phinney, Parshall, N. Dak. Phinney is a member of the board of supervisors of the Fort Berthold Soil Conservation District.

"Strip cropping against the wind, together with stubble-mulch farming to give fallow strips added protection, have done a fine control job," Phinney says. "Wind erosion is practically nil on my place now and the yields have come up."

The Phinney conservation plan includes also some waterways to permit escape of excess water from low areas, a farmstead windbreak, and improved crop rotation. All 337 acres of cropland are now farmed in strips 10 rods wide with stubble-mulch tillage.

APPROPRIATE AWARD.—Mouse River district, N. Dak., is awarding subscriptions to the SOIL CONSERVATION Magazine for all district contestants of the Conservation Achievement Program Contest, as well as for supervisors and assistant supervisors.

FRONT COVER.—From the air John Busch has captured by his camera a fine view of an orange grove near Gotha, Fla. Contouring is the rule on innumerable young orchards throughout the country, where modern conservation prevails.

All orders go to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

This piece of county equipment is as familiar with terrace building as with road maintenance.

COUNTY OFFICIALS SMOOTH THE WAY

By CHRIS WEBER

BY WORKING hand in hand, the county commissioners of Sedgwick County, Colo., and the supervisors of the Sedgwick County Soil Conservation District have solved a difficult terracing problem and achieved remarkable results for the entire soil conservation program. Cooperation set the stage for the district's first-place triumph in the 1950 Denver Post-KLZ soil conservation contest.

This part of northeastern Colorado is characterized by rich, fertile soils bordering the South Platte River, and the rolling, dry section to the south. The table areas are commonly referred to as "hard lands." A wide variety of soils and crops are to be found. This complicates the soil conservation job even on the best-managed farms.

Martin Sorensen, Emory Price, and Robert Ricker, our county commissioners, were among the first to become interested in the development of soil and water conservation. It was natural that when the Sedgwick County Soil Conservation District was organized in 1948, the commissioners were quick to offer help by providing offices for the district and SCS in the new courthouse where all Federal agencies are housed on the same floor without cost to them.

The county commissioners long had followed the custom of making heavy equipment available to farmers for doing such odd jobs as grading driveways and filling gullies. District farmers naturally turned to the county commissioners for needed help. In the valley farmers needed a lot of land leveling, while those on the tablelands were concerned with terracing and stock ponds. Private

Commissioners Robert Ricker, Martin Sorensen, and Emory Price.

contractors started land leveling almost as soon as the district was launched, but terrace building, new to the area, presented a more difficult problem.

No farmer in the district had the heavy equipment for building good terraces, and none cared to venture an investment for such expensive machinery. The county commissioners were hesitant, being afraid that they might be considered as competing with private contractors, but they soon found that such competition was nonexistent. They agreed to construct terraces with county equipment so long as they were not competing with contractors and did not interfere with road maintenance.

Soon the county was building about three-fourths mile of broad-base terrace per day. Now, all terraces are being constructed by the county at very low cost—a tremendous impetus to the terracing program.

Martin Sorensen, chairman of the board of county commissioners, notes two advantages from

Note.—The author is work unit conservationist, Soil Conservation Service, Julesburg, Colo.

county-district cooperation: first, it promotes more conservation work on the land at lower cost; second, it creates additional work for county equipment, and maintains steady employment without lay-offs during slack periods of road work.

The charge for the large maintainer now is $6.75 per hour with the operator being furnished; the charge for carry-all and tractor is $7.50 per hour. The average cost for a mile of terrace now runs around $90. More than 75 miles of broad-base terraces have been built in the district to date.

The terraces are well-packed and there is little settling. This saved many terraces from "going out" during heavy spring rains. One field received more than 6 inches of rain in 2 days, with 4 inches falling during a brief period. Nevertheless, only a slight "over top" occurred in a few places.

"The district does not own nor do we intend to purchase any heavy dirt-moving equipment," says H. E. ("Hub") Reichelt, Jr., district chairman and 1950 soil conservation champion in the Denver Post-KLZ contest. "It would be foolish to buy such equipment and put the district in debt when we are getting such splendid cooperation from the county commissioners and the private contractors."

Cooperation does not end with terracing. During the peak of the land-leveling season, when private contractors have all they can handle, the county carry-all and tractor are used for leveling and building stock ponds, usually at the prevailing rate.

This unusual arrangement between district and county has done much to stimulate and promote interest in the establishment of permanent soil and water conservation practices.

OTHER FARMERS LIKED WHAT THEY SAW

By A. E. McCLYMONDS

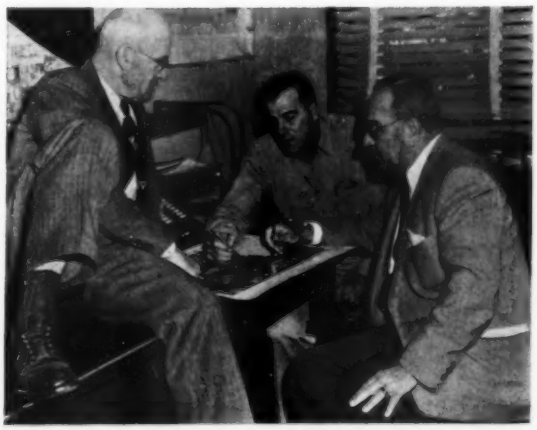
A RELATIVELY small group of people with land about 7 miles northwest of Hutchinson, Kans., have made drainage history. They organized the Grant Township Drainage District on a small basis after it became apparent that a larger district would be defeated. Then, through their cooperation, they got the necessary drains built without spending much for rights-of-way.

This drainage district is the direct result of teamwork by the people in it, the Reno County Soil Conservation District, and the Reno County commissioners. Now, with the drainage system only a couple of years old, the district has already had its first addition through petition from landowners. There is prospect for several such additions.

The pay-off of such cooperation is not only in the restoration of land to production, but also in keeping the cost of drainage low.

"It hasn't all been smooth sailing," admits Fred Strickler, chairman of the drainage district board and owner of a dairy farm. "We first attempted to organize the district on the basis of the whole area that should be served. It soon became evident that this would fail, so it was dropped.

"Then a group did some canvassing and found that there were enough farmers who wanted the drainage and would provide the necessary rights-



Talking things over: Fred Strickler, drainage board chairman; R. G. Cameron of SCS; and Howard Carey, treasurer.

Note.—The author is regional director, Soil Conservation Service, Lincoln, Nebr.

of-way, and whose land was so situated that the drains could be built without complications. The district was organized on that basis."

Originally, 3,840 acres were included. This has now been augmented by 1,280 acres.

The farms involved are in the nearly level bottom lands of Cow Creek Valley. They are part of an estimated 150,000 acres along Cow Creek that are in need of drainage.

Cow Creek is notorious locally. It traverses two other counties besides the northern part of Reno County in the 50 miles from its source to Hutchinson, where it enters the Arkansas River.

The creek's channel is small for so large a drainage. So are the channels of the tributaries. Some intermittent side streams lose their channels when they emerge from the higher lands and the water they carry spreads out.

Most of the valley is subject to frequent flooding from the overflow of both the main creek and the tributaries. This happens from three to seven or eight times a year. In 1941 Strickler's farm was flooded seven times.

High-water stages usually pass quickly, but floodwaters remain in the low areas in the nearly level fields. There is no natural escape.

The area also has trouble from below. A high water table makes much of the land too wet for crops or the better grasses; it also brings alkali salts to the surface. The white areas range up to 30 or 40 feet across now, and they are growing.

"We can't do anything about Cow Creek and its tributaries, of course," says Strickler. "All we can do is provide an orderly way to dispose of the water after the creeks go down. That's what the drainage system is for.

"Even if we could do something about the creek, it wouldn't solve all of our problems. We still would have the problem of a high water table, especially in wet years, and still would need drainage."

Start of the drainage-district idea came as a result of the operations of the Reno County Soil Conservation District, where these farms lie. Not much could be done to conserve the bottom land unless drainage outlets were provided. That meant that water from some farms would have to be taken across other farms.

The soil conservation district's board of supervisors—C. V. Warner of Arlington, H. L. Brownlee of Sylvia, Walter Pierce of Hutchinson, and Floyd Goodenough and H. P. Graber of Pretty Prairie—encouraged organization of the drainage district. The farmers formed a committee for the purpose, and SCS technicians made preliminary investigations.

Two bulldozers work on the main drain in the first addition to the Grant Township Drainage District.

Organization of the drainage district was taken under the Kansas law that permits the county commissioners to act, rather than under the law whereby the organization is handled through the district court.

"The county commissioners have cooperated with the drainage district all the way," says Howard Carey, treasurer of the district's board. "Under the State law, the county builds the bridges and culverts that are over 4½ feet long.

"The commissioners knew that they would have some bridges and culverts to build. But since adequate drainage would reduce road maintenance costs, they favored a drainage district. Furthermore, the county engineer recommended that the district be organized."

Design of the drainage system was handled by SCS technicians, and construction was by contract. And the farmers are well along with the building of field laterals, for which they pay individually.

Every farm in the drainage district has a complete conservation plan, and the laterals are being built exactly as charted. They serve both to remove surface water and for subsurface drainage to keep the water table from getting too high.

Administration of the drainage district and construction of the drains were made easier by the cooperative attitude of the people. Rights-of-way were granted for nominal fees. Little was spent except for actual construction.

"We issued only $16,000 in 20-year bonds for construction of the system in the original 3,840 acres," Carey reports. "Besides the saving in cost of rights-of-way, we also saved money by not having to go to the trouble of assessing benefits. Every man pays a uniform rate per acre on the land he has in the district. They all wanted it that way.

"The cost of drains and structures built by the drainage district amounts to a little less than 50 cents per acre per year during the life of the bonds. That covers both the interest and the repayment of borrowed money. Or, to put it another way, a farmer needs to raise only 30 more bushels of wheat per quarter section, at present prices, to meet this payment."

Already, the drainage system has had the effect of improving land that is under cultivation, and of making it possible to restore abandoned land to production. Correction of the alkali situation will take time, even though the soil is sandy loam.

The principal trouble on the farm of Clarence Hobbs was standing water in low areas. Even in years when rainfall was not excessive, Hobbs had to farm the low areas separately. In wet years, his crops there were badly damaged.

Now it is possible for him to work all the farm at the same time. It makes his farming easier and less expensive, and he is rid of the surface water before it hurts the crops.

Strickler's fine herd of Ayrshires was all that kept him going. Until the drains were built, Strickler raised only one winter wheat crop in 4 years. On another field, he was not able to raise a row crop in 10 years. His alfalfa became poor because of the high water table, and his pasture was hurt.

Carey had a comparable experience on the section and a half that he bought a few years ago. It has been many years since most of it was cultivated. It had become too wet for anything except some native grasses that can stand a lot of water.

Carey now has laterals on that half section, and has started the bedding system of farming. Last year he got a wheat crop.

"One thing I'd like to call attention to," he says, "is the fact that the laterals were built over a year ago, and they still are flowing, even though we have had no rain for quite a while. That is subsurface water they are intercepting. This shows pretty conclusively that the ground water table is too high. It explains some of the troubles with crops, alfalfa, and grass production on the lower lands. Getting rid of this excess water is as important as draining off the surface water."

Farmers who are in the addition to the drainage district still have the work on their lands ahead of them. The main drain was completed in October 1951. *These farmers acted because they liked what they saw.*

Carey sums up the situation this way: "To get the best out of a drainage district, like anything else, requires cooperation among neighbors—not just in organizing the district and building the drains. Frequently, the best way for one farm to reach the drain is across another's land.

"Several illustrations could be used, but I'll merely cite my own. One farmer has a 40-acre field that can best be drained by crossing one of my fields. We have the services of the SCS technicians, who know where the ditches should go. Well, I let him cross my place. Now the ditch is right and benefits me as well as him.

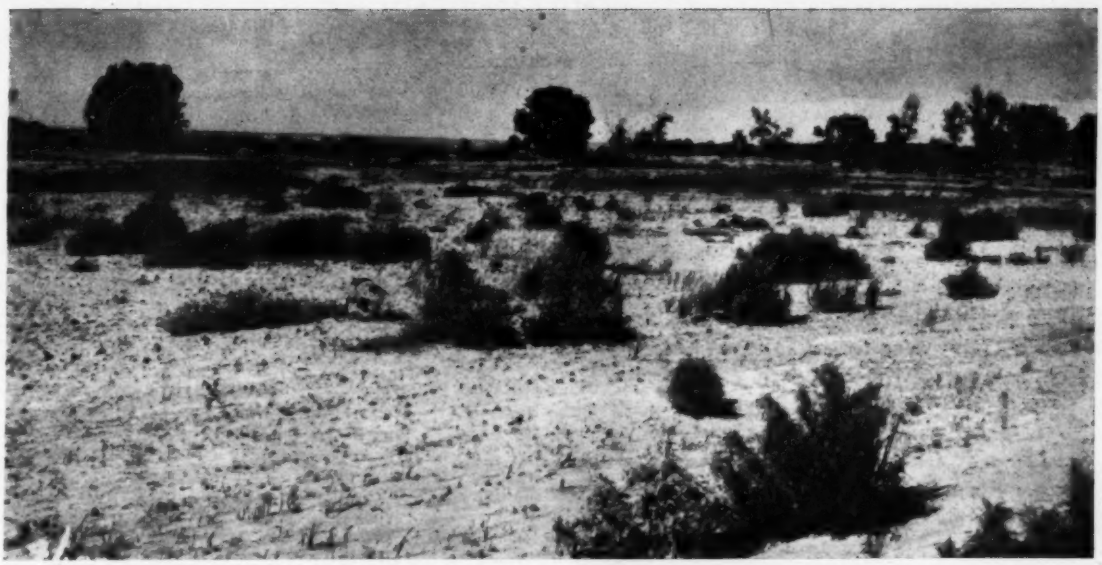
"I know he has better drainage. And I know I'm better satisfied, because he has no water impounded on the field next to mine."

Such cooperation already has paid. It got these farmers a drainage system at low cost. They are getting their wet land back into the high production of which it is capable. And they have set an example that has caused other farmers to join them.

UNIQUE FILM SERVICE.—The Allegany County and Steuben County (N. Y.) Soil Conservation Districts maintain their own library of 44 different films at Belmont. The County Federation of Sportsmen's Clubs and several schools contribute financially to its support.

Robert A. Reed, SCS district conservationist, reports that the films are selected to meet the needs of youth and adult. Annual cost for purchasing of new films and replacement of worn-out prints ranges from $600 to $800. The films are loaned to schools, farm groups, and organizations within the two districts. As many as 30,000 persons view the films each year.

A unique feature is that films are not mailed to users. Because use is limited to the two counties, they can be picked up one day and returned the next. Under this system, it is possible to show the same film on six programs in 1 week. Formerly it was difficult to obtain a film on short notice, or when needed, and much time was lost while the film was in transit.



Once a good field of alfalfa on a Pease Bottom farm. Irrigation seepage raised water table; only a few plants survived. Now firm again, this field will be replanted to irrigated crops; the drainage system has lowered the water table to a proper level.

DRAINAGE RECLAIMS PEASE BOTTOM FARMS

By TRUMAN C. ANDERSON

FARMERS in the Treasure County (Mont.) Soil Conservation District, on deciding 2 years ago to cooperate in development of the Hysham Bench irrigation project, determined to avoid so far as possible the mistakes made on old projects.

For a sobering example of a serious error—failure to provide a drainage system that will dispose of irrigation waste water and at the same time control the ground water table by intercepting and diverting seepage water—they needed only to look to the other side of the Yellowstone River in their own soil conservation district.

Land in the 6,400-acre Pease Bottom irrigation district had been badly damaged because of lack of proper drainage. Some of the land was out of production. Some was producing little. The seeped area was spreading. Areas white with alkali salts were multiplying.

Note.—The author is State conservationist, Soil Conservation Service, Bozeman, Mont.

A happier story now can be told about the Pease Bottom lands. Through cooperation with the soil conservation district, the farmers there possess a comprehensive drainage system designed by SCS technicians. Construction was on a pay-as-you-go basis. Farmers pooled their PMA payments, then made up the difference from their own pockets.

The same board of district supervisors supplied aid to both the Hysham Bench and Pease Bottom farmers. The same Service technicians who supplied technical services to the Hysham Bench project designed the Pease Bottom drainage system. They did their work so well that some farmers who previously could see no hope for drainage are now finding their lands rehabilitated.

Irrigation began on the Pease Bottom, a nearly level area nestling between the Yellowstone River and the tablelands to the northwest, many years ago. Its story is one that is common in the West. The early settlers first used the flood flows of Alkali, Edwards, and Muggins Creeks for flood-irrigation systems. Then about 1904, they organized the pres-

ent ditch system, getting their irrigation water by gravity flow from the river. There was more water than could be used, early in the season. But later in the year, when the river was low, little got into the irrigation system and the irrigation water that was dumped into slough areas gradually disappeared. Because there was not a plentiful season-long supply of irrigation water, cultivation was not intensive.

About 25 years ago, a diversion dam was built in the Yellowstone River. It provided enough water for season-long irrigation. Acreages of beets and other intensively cultivated crops increased. More irrigation water than necessary was used, but still there was no way to dispose of the waste.

Consequently, the accumulation of seepage water —seepage from the supply canal which is now full all season, from too-heavy irrigation, and from the dumping of irrigation waste water into depressions —raised the ground-water level near the surface.

Effects of this were first felt on low-lying areas of heavy soil away from the river. The ground-water level stood too high for most crops to grow, while the alkali salts brought to the surface made the land even less suited for cropland use. Through the years, this situation spread until a large part of the Pease Bottom was affected to varying degrees.

Reclamation and conservation of this land started with a request to the district supervisors for technical aid. The Soil Conservation Service, aiding the district, made a topographic survey in 1948 and sank a series of test wells to study the rise and fall of ground water and its direction of movement. The wells also furnished information about the material beneath the surface, which was found to be largely of a sandy nature.

Technicians designed the drainage system after studying the test wells for a year. The very slight slope of the land posed many problems. The planned system contemplated a total of 13½ miles of ditches, including main drains and laterals. At first the farmers thought to organize a drainage district. Then they decided to go ahead on their own.

To date the two principal drains, one of which has two spurs, have been completed and the farmers already have felt the benefits.

One of the happiest men in the Pease Bottom is Leo Cunningham.

The level of the water in this slough fluctuated seasonally with the water table; it was shown by test wells sunk by SCS during study of area before designing drainage system.

"It looked as though it was up to me to find a new farm, because this one was just about shot," he says. "But this year I was able to farm the whole 240 acres normally."

He bought the farm in 1942. At that time, he says, it was in good shape. All was irrigated except one field that was a little high. Cunningham raised a sizable acreage of beets. Then the seepage water and alkali began to spread and by the time the ditch was started the whole farm was in sad state —"even the dry-land field was boggy."

"Today it's a different story," Cunningham reports. "The water table has been lowered. How much? Well, I have a well at the upper part of the farm that had 10 feet of water in it. Now it is almost dry.

"I had a fine stand of wheat on the dry-land field, but hail hurt it pretty badly. The rest of the farm was cultivated and irrigated, but I had a place to put the irrigation waste — in the drain. Where much of the land was white, the alkali seemed to disappear. I got pretty fair yields this year.

"Of course, it will take some time to get the alkali out of the soil, but believe me, the outlook is a lot different than it was a year ago."

Anfin Muri's farm is nearer to the supply canal than Cunningham's and, therefore, a little higher. His crops had not been affected much so far, but he could see the handwriting on the wall.

"The water table was creeping up," he recalls. "I could tell it in several ways. There were a few alkali spots in the lower part of the farm. I noticed, too, that the farmyard seemed spongy

when I drove equipment over it. Then, when I dug a basement I ran smack into a seepage problem.

"Since the drain was built, there's been a change. We've had no basement seepage trouble this year, and the farmyard has lost its sponginess. I guess the drain came just in time to save me a lot of trouble."

Harvey Stoll tells of trying to level one of his fields in order to improve irrigation.

"It just couldn't be done," he says. "The tracks of the tractor would sink and the ground between them would rise so that the carry-all scraper could not operate. The scraper edge couldn't be raised high enough to clear the surface when it came time to empty the carry-all."

He, too, was better off than Cunningham but the seepage problem was such that the lower areas of the farm were "awfully wet" and some of the higher land was getting soaked. Only "alkali weed" grew at places.

"Those lower areas are firm now so that I can operate equipment on them," he notes. "The land I tried to level is firm, too."

C.V. Kimball is one of those close to the Yellowstone River who doubted that there was possibility of drainage. In fact, he had a dike to keep the Yellowstone off his land during high-water periods.

"The water situation here was getting really bad," he explains. "At one place along the dike the water got so deep during the irrigation season that the cattle had difficulty crossing it on their way home from pasture. There were 2 feet of water in the bunkhouse basement, which was on higher ground. Even a field too high to irrigate was seeped and salted.

"I couldn't see any chance for drainage, because I'm right down at the river's edge. I thought I would just hang on as long as possible and then move. I have other land, upland. But, the engineers figured a way out. They led the water away from the river at my place to the main drain that enters the river quite a ways downstream.

"That gave the necessary fall. Now I can farm the whole place. The boggy land has dried out and is firm. Of course, the salted land hasn't fully cleared up yet."

With the main drains built, growers were ready to start building the laterals leading from their

(Continued on page 254)

HAIRY VETCH RESCUES THE CROSS TIMBERS

By LOUIS P. MERRILL

THE STORY of hairy vetch in the sandy, peanut-growing Texas and Oklahoma Cross Timbers area is a chapter in itself in the history of the conservation of soil and water.

G. F. Wimberley, postmaster of Perrin, Tex., tells J. M. Dickenson, former district supervisor, how hairy vetch increased his oats yield from 15 to 60 bushels. The two piles illustrate the difference.

Hairy vetch came to the Cross Timbers 9 years ago. That was in the Upper Leon and Brown-Mills Soil Conservation Districts around Rising Star, Tex., where district supervisors believed hairy vetch could be useful in a coordinated soil conservation program if it could be made to grow successfully year after year. The supervisors imported seed from the Pacific Northwest and furnished it at cost to cooperating farmers. They also provided machinery to plant and harvest the vetch.

Success depended on doing the job right. It was important to have proper seedbed preparation, to plant at the right time and depth. It was important, too, to inoculate, to use phosphate in the right amounts, and to use a nurse crop like abruzzi rye.

Field men of the Soil Conservation Service pitched in to help. None of the technicians was more earnest than the late L. K. Gregory, then work unit conservationist at Rising Star. He preached the value and importance of hairy vetch with evangelistic fervor. He recognized the legume

Note.—The author is regional director, Soil Conservation Service, Fort Worth, Tex.

G. G. Goss, farmer and supervisor of Brown-Mills Soil Conservation District, examines a cluster of the big pecans he raises in his 26-acre orchard. He increases yield and improves quality by using hairy vetch as green manure.

as the salvation of the Cross Timbers if it could be definitely established.

Gregory gave much of his time to seeing that there was no slip-up in the technical aspects of vetch production. He became known as "Hairy Vetch" Gregory. His splendid work was remembered when he died a year and more ago. The boards of supervisors of the two districts to which he was assigned adopted resolutions mourning his passing and eulogizing him for his outstanding contribution to the cause of soil and water conservation.

Disking hairy vetch and rye cover crop in 60-acre peach orchard on farm of Doss Alexander of Rising Star, Tex., a Brown-Mills Soil Conservation District cooperator. With Alexander (left) is the late L. K. Gregory, SCS technician who played leading part in establishing hairy vetch as a winter cover crop in the 9-million-acre Cross Timbers problem area.

Back in 1943, when Gregory and other Soil Conservation Service technicians were working to get hairy vetch established, it had looked as if the highly erodible soil of the Cross Timbers problem area would be gone before a satisfactory cover crop could be grown to tie the land down. The soil of this 9-million-acre area melted like sugar when it rained, and took to the air when the wind blew. A successful legume was a missing link in the coordinated soil conservation program, especially where the soil was left bare all winter, as was the case after the harvest of peanuts.

At first hairy vetch appeared to be a failure like other legumes that had been tried. But technicians like Gregory, and determined farmers under the leadership of their district supervisors, stuck to the problem. Success finally came.

Vetch spread fast in use. When vetch first was tried in a general district program around Rising Star in 1943, only 244 acres were planted. By 1946, acreage had increased to about 30,000 acres and seed production was 30,000 pounds. In 1950 there were 334,374 acres planted to hairy vetch in Texas, 407,651 acres in Oklahoma, the bulk of it in the Cross Timbers. Now the use of hairy vetch has spread far beyond this problem area in the two States. In 1950 the production of hairy vetch seed totaled 10,819,000 pounds in Texas and 9,924,259 pounds in Oklahoma.

As part of a coordinated soil conservation program, hairy vetch is used in combination with other practices, including crop rotation, contour strip cropping, stubble mulching, terraces, and pasture improvement.

Used as a green manure, hairy vetch improves the fertility of the soil and increases the yields of following crops. Peanut yields, for example, have increased as much as 20 bushels per acre, oats as much as 45 bushels.

The stockman, as well as the row-crop farmer and orchardist, is interested in hairy vetch, not only because of its effectiveness in controlling erosion and improving the soil but also because of its value for grazing at a time of year when green forage is at a premium. Hairy vetch is also sometimes used for hay.

And for farmer and stockman there's always that extra dividend which the harvested seed of hairy vetch can bring in.

IN ONE YEAR, "A FIELD OF BEAUTY AND PROFIT"

By MR. AND MRS. LEONARD KIMBALL

OUR SMALL FARM, 100 acres, is located 1½ miles west of Maud, in Jefferson Township, in the Shelby County (Iowa) Soil Conservation District. Our little story begins back in 1948 when we came to the crossroads, so to speak. Would we go on in the same old rut or would we take a new road by way of a complete soil conservation farm plan? After thinking it over, we went to see the county agent.

He seemed interested in our problem and promptly set about helping us. Nolan Walker, the SCS man in our district, came to our home and helped us work out our plan.

We found that what we needed most was to make our permanent pasture into good grazing land. The upland part of our farm had probably been in cultivation as long as there had been a white man in this territory. The slopes were so badly eroded that one might well call it wasteland. Lespedeza grew only about 3 inches high, scarcely tall enough for a cow to graze. About half the land was bottom land and lay along Otter Creek.

On a farm like ours there wasn't much extra money to try out new ways. We had to make every dollar count, and we couldn't afford to make mistakes. We knew other farmers had made farm planning pay, but could we?

In the fall of 1948, we decided we would try 5 acres of pasture improvement on the hilltop that had been farmed the longest. If it worked there it surely would work on the better parts of our farm. We were advised to apply 3 tons of lime, 1,000 pounds of rock phosphate, and 400 pounds of 8-8-8 fertilizer.

Walker helped us to stake contour lines and we followed the plan as closely as we could. In the fall we drilled wheat and sowed red clover, timothy, redtop, and lespedeza.

We spent about $30 per acre on the worn-out piece of land, not counting all the work. We wondered if we would ever see the money again. There may be others who know what we mean by that. We did not have a lot of extra cash lying around and couldn't afford to lose that much money. But we had to wait until harvest to know how it would turn out.

The wheat yield was 25 bushels per acre and had a cash value of $40 per acre. We had our $30 back plus $10 to cover grass seeding and harvest cost. Our wonderful stand of clover and grass we like to count as interest on our investment. In 1 year's time we saw a field that was of little value turned into a field of beauty and profit.

We did not hesitate when the time came to work out the next field. Last year we completed our permanent pasture plans except about 2 acres that require bulldozer work. We will do that this year.

What is the value of our farm plan? Our answer is that we know from year to year what we expect to do, the types of soil we have to work with, and what treatments are necessary to produce the best crops. It is a satisfaction to know that we are building our soil instead of taking away from the value of it.

(Continued on page 254)

A MOUNTAIN CAMP

where BOYS and GIRLS learn about Conservation

By GEORGE SHARPE

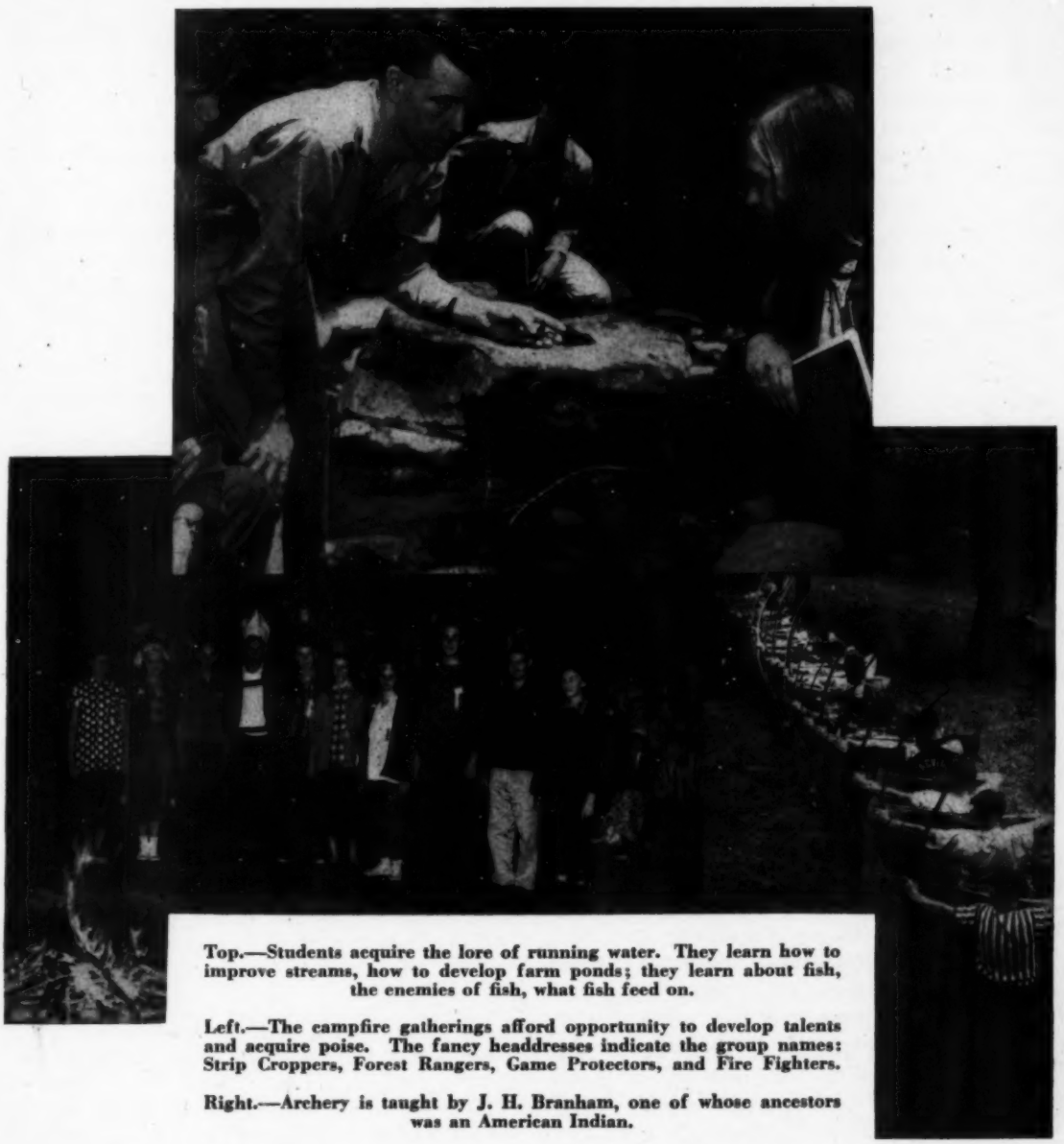
NESTLED in the mountains not far from the center of West Virginia is Camp Caesar, Webster County's 4-H Camp. It is in this ideally located retreat that West Virginia holds its conservation camp each spring. The forests come down to the back door while the Gauly River goes roaring by at the front. The most evidences of modernity are the State highway that passes through the camp and a railroad that hauls logs down the river from one of West Virginia's last virgin forests and brings coal back from one of West Virginia's largest coal fields.

Note.—The author is extension soil conservationist, Morgantown, W. Va.

Two students of the author's class in soil and water conservation consider the use of the abney level. Work included laying out of a field in contour strips, running lines for diversions, and other tasks common to the practical safeguarding of the land.

Left.—Firearms always fascinate boys and girls of the mountains. Many learn to shoot at an early age. The youngsters at camp learn about the conservation of human life and wildlife.

This is the spot selected by a group of interested people just 10 years ago for our State's first conservation camp. The initial sponsors were the Agricultural Extension Service of West Virginia University, the Conservation Commission of West Virginia, the Soil Conservation Service, the State Soil Conservation Committee, and the Federal Cartridge Corporation. Each of these agencies was responsible for 40 campers, and each furnished its share of instructors.



Top.—Students acquire the lore of running water. They learn how to improve streams, how to develop farm ponds; they learn about fish, the enemies of fish, what fish feed on.

Left.—The campfire gatherings afford opportunity to develop talents and acquire poise. The fancy headdresses indicate the group names: Strip Croppers, Forest Rangers, Game Protectors, and Fire Fighters.

Right.—Archery is taught by J. H. Branham, one of whose ancestors was an American Indian.

Several sponsors have been added to the list since 1941: The West Virginia Vocational Educational Department, the West Virginia State Garden Clubs, the West Virginia Forest Fire Protective Association, the Monongahela Power Company, the West Virginia Sportsmen's Clubs, the Forest Service, and the West Virginia soil conservation districts.

Who are the young people who attend this well-planned conservation camp? First, there are boys and girls between 15 and 19 years of age. They generally number about 200, two-thirds of them boys and one-third girls. Every county in the State except one was represented in 1951. Campers include 4-H boys and girls, FFA boys, FHA girls, Boy Scouts, Girl Scouts, and boys and girls selected

because of their interest in conservation.

What does this wonderful group of youngsters do at camp? For class purposes, they are divided into 8 groups of 25 each. For campfire and afternoon activities, they are divided into 4 groups known as Fire Fighters, Strip Croppers, Forest Rangers, and Game Protectors. The camp leaders are called "knotheads," and their leader is designated "Chief Top-Knot."

Afternoon activities include such things as archery, camp crafts, the care and use of firearms and fishing tackle, the making of fly rods, and the tying of flies. Then come games and swimming.

At 7 o'clock the whole camp engages in vesper services, which many campers regard as an outstanding feature.

At 8 o'clock comes the campfire program, which begins with a fire-lighting song written especially for this camp.

On Paul Bunyan night—one of the most popular—the "knotheads" reenact mighty Paul, his wife Tiny, Babe the Blue Ox, and other characters found in the classic tales of this legendary woodsman.

During the week every boy and girl attends classes in game management, trapping, forestry management and forest products, forest-fire control and forest recreation, fish management, nature study, soil and water conservation, and youth conservation.

Campers are told the what, why, and how of each conservation program in the State. Most of the teaching is by actual experience. In their study of soil and water conservation they are told what erosion has done to the State and what is being done about it, about the soil conservation district program and how the programs are tied together. Then each boy and girl is taught how to use a hand level and run a contour line. Many of the young people, after such training, help lay out contour lines for their fathers.

The camp has one of the finest youth-camp directors in the country in I. B. "Tubby" Boggs, State boys' club agent. He is assisted by G. H. Overholt, of the West Virginia Forest Fire Protective Association. Ralph H. Quick, chief of the division of education and publicity, Conservation Commission, is camp secretary. Jack Burton, Webster County agricultural agent, represents the 4-H boys and girls of Webster County as host.

If you want a real meal and a look at our future conservationists, drop around to Camp Caesar some day during conservation camp. Many campers claim that Jack serves the best food in the world.

On going home, these boys and girls are especially enjoined to report to the organization that sent them. This report often constitutes one of the outstanding programs for a garden club, a sportsmen's club, or some other group. Some 2,000 boys and girls have attended conservation camp at Camp Caesar already, and many of them now are taking positions of leadership in conservation.

DRAINAGE RECLAIMS FARMS

(Continued from page 249)

places to the main drains. This would get rid of excess surface water from heavy rains, flooding of creeks, and irrigation waste.

Along with drainage, these farmers also are cooperating with their district for the establishment of complete individual conservation plans.

Included in the plans, besides the necessary laterals, are improvements in irrigation systems and land leveling, so that the irrigation water can be controlled properly. There are also soil-building crop rotations that include grass and legumes, and the use of fertilizers. Before the main drains, there could have been no such individual farm conservation. Land was being ruined, and nothing could be done about it until the seepage problem was solved. Now the area is rapidly on its way back. It was once known for its fertility, and the program is expected to restore it to its former status.

IN ONE YEAR

(Continued from page 251)

We have come to know the value of plowing under a green manure crop, and of contour cultivation. While improving our permanent pasture, we are at the same time conserving our soil.

Now we have plans under way for a new modern dairy barn. We hope to own a small herd of Guernsey cows that we can handle on our own farm and have enough income to live comfortably.

Our farm planner and our county agent are very understanding and always ready to help us with our problems.

THE JOB AHEAD

Excerpts from an address by Dr. Robt. M. Salter, Chief, Soil Conservation Service, at the sixth annual meeting of the National Association of Soil Conservation Districts.

THE concept of soil conservation has come to mean proper land use, protecting the land against all forms of soil deterioration, rebuilding eroded soil, conserving moisture for crop use, proper agricultural drainage and irrigation where needed, building up soil fertility, and increasing yields and farm income—all at the same time.

It is based on the understanding that you can conserve soil without building it, but *you cannot build soil without conserving it.*

Modern conservation farming involves increasing soil productivity and increasing standards of farm living for today, tomorrow, and for posterity. It combines the objective of national welfare with better living for the people who work the land. It has come to mean efficient abundant production on a sustained basis.

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There is ample evidence throughout the country, in every county and every soil conservation district, that our soils can be made to produce more abundantly. Studies now being made, aimed at estimating agriculture's maximum production potentials, indicate that average per-acre yields for most crops could be increased from 60 to 75 percent if all of the technology now available could be put to work on the land.

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Throughout the country farmers and ranchers are working together on Extension committees, on Rural Electrification boards, on PMA committees, on credit boards, on advisory grazing boards, on irrigation district boards, and—last but not least—on soil conservation district governing boards.

In my judgment, soil conservation districts represent the best device so far created through which Government can assist farmers without dominating them. Soil conservation districts provide one of our best examples of democracy in action.

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To develop a sound plan for conservation farming, a farmer needs, first, to have a *scientific inventory* of his soil and water resources. Few if any farmers can classify their own soils.

Next, the farmer needs assistance in determining the *best alternative uses and treatment* for the land based on this scientific inventory. He needs help in developing a plan for soil and water management using the best technology adapted to the physical and human resources of the farm and to watershed and other resource problems of the community.

Finally, most farmers need *technical help in putting complex practices into application.* Few farmers have the necessary training to lay out complicated water-control systems and terraces. Many need technical assistance in range management, in establishing improved pastures, in wood-lot management, and other complex practices.

Furnishing this on-farm technical assistance for soil, water, and plant management—aimed at soil protection and improvement, water conservation, and economic production on a sustained basis—is the primary job that the Congress has assigned to the Soil Conservation Service working with and through soil conservation districts.

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Although there may be misunderstandings, I see no necessary duplication between education, technical assistance, and financial assistance in public-supported effort to help farmers get conservation farming into practice.

THE JOB AHEAD involves making all three work harmoniously and more effectively as a team in speeding up the application of technology on the land.

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We can stop the decline of our Nation's precious soil resources. We can build new life into our depleted soils. We can reach levels of production far above those of today. We can meet the pressing demands of a growing and vigorous nation on its agriculture. And we can create in America a shining example of what democracy and science, properly joined, have to offer a free world. This is, for us all, THE JOB AHEAD.

THE DEATH OF A GREAT CITY

By M. J. KIRSCHNER and MALCOLM ORCHARD

THE great River Jamuna emerges from the Himalayas and runs for 200 miles straight south across the Indian plains. Halfway down this stretch ancient India found a crossing for the east-west traffic. The left bank overlooks the swampy right bank. Rolling hills offered sites for forts and castles, and thus the cities which were built in these hills controlled the road into the rich plains farther east. We say cities because many have been built and destroyed. The last dozen or so are known by the name of Delhi. Their ruins are scattered over an area 25 miles long and 10 miles wide.

This scattering is unusual, for broken old cities in the East generally supply the base for the new. Thus, a modern town stands on a hill which is man-made and contains many layers of ruined and forgotten cities. In such a hill one may count as many as 30 layers, the layers representing older and still older civilizations.

Note.—Mr. Kirschner is in charge of Geigy Insecticides, Ltd., and is an amateur archeologist. He is from Munich, Germany, but has spent the last 26 years in the East. Mr. Orchard, a former editor and executive of Farm and Ranch Publishing Co., is an editorial adviser to the Government of India under the Point Four program.

Water outlet, upper side.

In the hot Indian plains people like to live on a hill. The higher the hill the cooler is the breeze fanning them on their roofs at night. In any village you will find the Rich Man's house standing tallest, and if there is a raja's castle, it will be towering above any building in town.

Hills were obviously easier to defend than flat villages. An arrow will carry farther from a high wall down. One also had the advantage of the old bricks and stones from lower ruins which could be used to build the new city and its walls.

Why then, in the olden days, did rulers dot all these new Delhi cities over the rocky range

The dam is still "a grand monument for the creative mind of ancient India."

Sacred pool of Surajkhund, "a relic of the Hindu past."

Stairs descending to water-gate controls.

of hills and the semidesert flat? They were searching for water. Good fresh water, not stinking and brackish, as it is on the Jamuna riverbank.

The Muslims of India built six or seven of these towns. One of these, Tughlaqabad, was built in the course of 2 years, 1321-23. The ruins of this huge city are plain to see today, with enormous walls, water tanks, castles, and other evidences of a large population. The effort was for nought, as it was abandoned 7 years later for the lack of water.

The very oldest of the ancient cities was Indraprashth. The site was later covered by a Muslim fort, and no trace can be found today.

Next comes Surajkhund, 10 miles south. This city was laid out on a wide range of ridges, extending for miles in all directions. Today it lies in utter desolation. No road leads to it. In summer the ridges covered with numerous round boulders are a hell of sun-baked stone and dancing dust devils. In winter a few people come down for picnicking at the sacred tank.

This sacred pool of Surajkhund is a surprise amidst the rocks; a wonderful relic of the Hindu past. One can easily imagine the monumental temples which towered over the two great stairs, the State processions, the dancers, the warriors, and the throb of life in the streets of the city.

The vital water came from a lake 1 mile farther south. And this lake was artificial. It is obvious from the lay-out of the city that the dam of Anangpur was the great idea of its planners.

The name of Anangpur is derived from the kings by the name of Anangpal I and II who are said to have built the dam. Anangpal I lived about 650 A.D., and we may credit him with the great work of creating a lake for the inhabitants of the capital of India. None of the later capitals had such a lake, which is a pity. Modern Delhi and New Delhi would be much easier places to live in if we had King Anangpal's lake preserved for his late descendants of today.

The dam still stands with its spillways and outlets preserved. One still can see the rails for the sliding stone doors of the water gates.

Wheat fields from west side of dam, looking through the ruins of an old temple.

The dam still stands majestic—if you look at it from the valley. The work is still a grand monument for the creative mind of ancient India.

But the lake is gone!

Instead of blue waters, dotted with little islands, we have an expanse of wheat fields, which fill up the lake almost to the rim of the dam. The lake has silted up entirely, and, if we can see some of the details of the outlet and water gates, it is only because the Department of Archeology has done some digging deep down and has exposed the buried glory.

Ancient man who built the dam did not protect the surrounding drainage area from deforestation and subsequent erosion. Townsfolk went out with hatchets to cut a branch or two for boiling the evening pot of rice. In a century or two, a vast expanse of forest disappeared in order to keep the home fires burning. But this practice does not fill the kettle with water. And, when the water is gone, the people go, too. The dwindling lake could not supply enough water. King Anangpal's city was doomed.

The decay was a slow process. The familiar way in which old castles get leaky roofs, the old manner in which the great architecture of the East has fallen to pieces so often, and in so many places, was once again a road to devastation.

In about the year 1030 came the dramatic end. Marauding horsemen from Afghanistan, whose coins are still found in the villages nearby, stormed the city. The walls may have been undermanned and in disrepair, and once more a town was sacked, temples were despoiled and left in ruins to bake under a relentless sun.

The modern twin cities of Delhi stand in an arid semidesert. None of the ridges around will now make a catchment area large enough to fill a lake worth the name. No forests are left anywhere near. The relentless sun is still the same and ready to punish the thoughtless man with the hatchet. And his children's children are still being punished. And the children of his neighbors in the West will suffer too if the grim warning of an ancient city's death isn't understood.

PLEASE MEET A PUERTO RICAN FARMER

By LUIS OSCAR MARINI, Work Unit Conservationist Assigned to the Caribe Soil Conservation District, Juana Diaz, P.R.

THE man from whom you will read has lived and farmed, with his family, in our hills—those hills that have made many to feel defeated early in their lives. His name is Virgilio Negron Ocasio. He looks to be somewhat above the forties, is married with four sons and two daughters. Except two that are absent, the others help in the home and farm. His home is in Barrio Villalba Arriba, Villalba.

Our man, and his family, has come the hard way. About 1930 he got his first 4 acres of land. Then, he had to work outside to get his family living. Being a hard worker and thrifty, he is now owner of 62 acres covering two farms.

In 1949 he got interested in signing cooperative agreements with the Caribe Soil Conservation District. The local agricultural extension agent interested him in getting tech-

nical assistance of SCS through the district. In October 1949 he signed two agreements which included soil conservation plans for 46 acres. It was recently that he bought 16 acres close to the farm where he has his home. In a nearby future the plan of this farm will be amended to include this extra acreage.

After 2 years of relations with SCS and the district, we have asked Mr. Negron the following questions: Did these relations bring changes to your farming methods? Did you have problems when you began establishing the conservation practices recommended? Have you made your opinion about our relations, the work done, and results obtained?

Here is what the man has answered: "Since then, I am farming on the contour, using crops and other available residues, and practicing recommended crop rotations. I have seeded with molassesgrass 13 acres of pasture out of a total planned acreage of 28.5, have terraced and managed 4.5 acres of coffee from a total of 6, have also managed 7 acres of fruits and ½ acre of woods.

"When I began doing all this I did not find problems; on the contrary, I solved many that I had. After this last 2 years, I can say that, due to our relations, I have worked my farms with more protection and obtained more production. Outside of the increase in crop production, I have had an increase in my cattle with less acres of pasture. In 1949 I had 4 head; now I have 12. All these brought more economic returns and better family living. I have bought home appliances that I could not have before, and I have painted and repaired my home."

This answer of Mr. Negron shows also what he and his family have done and what they have obtained through conservation farming. They are a proof that this kind of farming is the best that could be practiced in any place—even in a strongly hilly section like that where they live. They are living examples that it could be done, that conservation farming is not only in books.

Subscriptions are invited from farmers in soil conservation districts. See rates inside front cover.

LAND LEVELING IN CALIFORNIA

By HERB BODDY

OVER the years people have done a lot with the land. They've plowed, seeded, fertilized, watered, and even sweetened it. And now they're at work leveling thousands of acres of the West's crop and pasture lands today.

In the States of California, Oregon, Nevada, Idaho, and Washington more than a quarter-million acres of uneven land have been graded and readied for watering. One-third million more rough acres are in the planning stage.

Almost every day in the Corning, Calif., area you can see rough, hummocky land being smoothed down and put in shape for irrigation. This land is being changed from nearly worthless, often abandoned acreage into high-producing pasture and cropland. So far, some 5,500 acres in the Corning Soil Conservation District alone have been leveled and put in top working order.

There's more to leveling than meets the eye. Not only must the field be graded properly to get good water distribution, but adequate means for getting water on and off the land must be made. A carefully planned lay-out is a must for farmers.

Technicians have surveyed and planned most of the land leveled around Corning. A good share of this land has been leveled by farmers themselves, using their own or district-owned equipment. But private contractors with big equipment are doing more and more leveling work.

Tractor and carry-all leveling land near Corning.

A Service technician goes over the ground with the farmer. This is done to get the lay of the land and to note any special leveling problems.

The first step is to stake out four guide rows. Stakes are set from 50 to 100 feet. In the Corning area they are spaced 50 feet apart. Two of the guide rows are laid out along the widest side of the field. The first row is 30 feet from the boundary; the second, 50 feet from the first one. The other two rows are set at right angles to the first two. You can get this angle in several ways. For example: (a) A square fence row; (b) an orchard tree row; (c) by instrument. All four guide rows are staked 50 feet apart.

After the guide rows are in, the farmer finishes staking the field by sighting along the stakes. It's also his job to mark stakes. The alphabet is used in one direction and numbers in the other. A stake may be marked A-1, U-10, O-10, and so on.

With staking accomplished, it's time for a technician to survey the field. This is done with the farmer acting as rodman.

The farmer places a stadia rod at the base of each stake, in turn. The technician sights on the rod at each stake through his instrument and jots down the reading. When the entire field has been surveyed, the combined readings are used to plot a map of the field. When leveling is done right, no soil is moved on or off the acreage, and a minimum of soil is moved to make grade.

Cuts and fills, charted on the map, are marked on the field stakes. This is often done by the farmer. But in the Corning area, it usually falls to the lot of the contractor. If the contractor understands the markings, the leveling job will proceed speedily and smoothly. That is why it is well to let him do the marking.

It's easy to spot the places that need cutting and filling. The "cuts" are measured from the top of the stake down, and marked in red. "Fills" are measured from the base of the stake up, and marked in blue.

The technician works with the farmer, lays out the field, and sees the job through. He is on the job a good part of the time while the leveling work proceeds. When all the cuts and fills have been made, the technician checks the new lay of the land with the farmer.

Leveling takes time and calls for lots of hard work. But farmers who have smoothed their rough land say the gains are high in terms of irrigation.

FARMING FOR BETTER LIVING

By CARLOS M. CAMPOS DEL TORO

Soil Conservationist Assigned to the Sur Soil Conservation District

MR. Fernando L. Colon Alustiza, a World War II disabled veteran, filed an application for credit at the Farmers Home Administration office in Ponce in September 1947. The young veteran was farming a 4-acre farm under a poor lease contract. The chief aim of the FHA in Ponce County is to help families farm better so that they can live better. The agency's supervised credit program assists those who cannot get adequate land resources and credit assistance elsewhere to get on a solid footing.

The application was duly certified as eligible for assistance by the FHA County Committee, and a Farm Ownership loan was recommended and approved to buy and develop a family-type farm. A loan repayable in 40 years at 4 percent interest was made from Government funds in the amount of $9,623 to buy 102 acres on Ward Anon, Ponce, P.R., on the coffee section. The farm is located far beyond the facilities of public road, and our client bought an Army-surplus jeep to facilitate transportation of farm products to market.

The family was in a poor economic situation. They owned a dairy cow, 30 laying hens, and 1 heifer, and they started on the farm business during 1948. The farm, with an old rotten house and inadequate farm buildings, was practically abandoned. The new farmer was in urgent need of both credit and technical assistance. The FHA provided sufficient funds to work out a long-time farm plan and the

service of a soil conservationist was required by the FHA supervisor.

The Sur district held a series of educational and training meetings in different communities, and announced free technical assistance and cooperation to the Schuck Tract, which was subdivided in eight family-type farms for veterans.

Farm No. 2 was sold to Mr. Colon and his young family of four. The interest shown by this veteran in the soil conservation program was so marked that we immediately started a soil conservation plan of 5 years to protect land from erosion and get a proper land use on this farm. A diversified program could not be adapted to the farm, due to the fact that it is a coffee farm, land is too steep, and soil conservation practices were urgently needed to stop soil erosion and depletion. A soil conservation survey was made, and a land-use map was developed with specific recommendations as to the use of land capabilities and conservation practices.

Coffee is grown under shade, thus requires woodland management, tree planting, individual terraces, pruning, fertilizing, and liming. A cooperative agreement was developed between this disabled veteran and the Soil Conservation Service in 1949. The agreement has been followed as scheduled and the practices evidenced better farming as shown in the increased yields of coffee per acre.

A newly built concrete house was made with Government funds provided by the FHA. Electricity was provided to the farm during the first year, and now the family is developing better farming and better living. Soil conservation practices brought about production increases from 100 pounds of coffee per acre to about 300 pounds per acre. This provides for a larger cash income which helps our farmer to pay his farm installments ahead of schedule, pay all his operating loans in full, improve health and housing conditions, own good livestock, control erosion, and increase income to assure better farming for better living.

The family team works and shares farm and home responsibilities. The wife, a young and beautiful woman, is a very hard worker, keeps the family vegetable garden, milks the cows, and keeps the house on a very good shape.

Receiving awards in appreciation of services to Oklahoma's soil conservation districts: "Sandy" Saunders, Dave Vandivier, Charles L. Fuson, and Roy E. Hayman.

FOUR HONORED

By H. M. CHAMBERS

THE supervisors of Oklahoma's soil conservation districts took time out during their annual meeting this year to say "thank you" to four "lay conservationists" who had given outstanding help to the district program.

The four who received appreciation awards were a radio farm reporter, a newspaper editor, a bank association secretary, and a utility company official. L. L. Males of Cheyenne, a district supervisor and chairman of the awards committee, made the presentations.

Recipients were:

O. A. (Sandy) Saunders, farm reporter of Station WKY-TV, Oklahoma City, who helped during the 1951 National Association convention in Oklahoma City, and who has continued to boost the work of districts at every opportunity.

Dave Vandivier, editor of the *Chickasha Express*, who has pioneered the promotion of the

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Note.—The author is State conservationist, Soil Conservation Service, Oklahoma City, Okla.

agricultural land-treatment program for flood prevention that is being applied on the watershed of the Washita River. Recently he appeared before a congressional committee in Washington in behalf of more funds for the project.

Charles Fuson, assistant secretary of the Oklahoma Bankers' Association, who has cooperated wholeheartedly with district boards of supervisors and local bankers in sponsoring banker-award meetings where conservation farmers were honored.

Roy E. Hayman, agricultural development engineer with the Public Service Co. of Oklahoma, who has spoken to many groups in the 20-county area served by his company, relative to doing soil conservation "the district way." His straight-from-the-shoulder statements to civic groups have done much to awaken the general public to the need of cooperating with districts.

This makes a total of 38 outstanding Oklahomans to receive soil conservation awards. Claude Thompson, of Ada, president of the association, said: "It's a splendid idea and we're going to keep giving awards just as long as laymen earn them!"

WATERWAY PAYS WAY.—A low area of 11 acres formerly too wet to produce good hay or be used for crops can now be farmed with the rest of the cropland and produces well, according to Ed Schmidt, New Salem, N. Dak. Schmidt is in the West Morton County Soil Conservation District.

The reason: A waterway was built to drain away the excess water, as part of the farm conservation plan developed for Schmidt's 800 acres.

"That waterway, or drain, more than paid for itself in the last year," Schmidt says. "Eight acres had not been broken previously, and it produced only about 20 tons of hay in 6 years. Poor quality hay, too."

Last year, however, the yield was 25 bushels of wheat per acre. Under the present crop rotation, it will be in corn this year.

TENANT URGES LEVELING.—One tenant farmer in the Carlsbad, N. Mex., area has offered to pay his landlord $5 more rent per acre annually if he will undertake land leveling as a conservation practice.

When James C. Wyman, Jr., of Loving purchased an 80-acre farm recently, he immediately applied to the Carlsbad Soil Conservation District for aid in establishing a soil and water conservation program.

About 2 weeks later, Wyman called at the SCS office to find out how the surveys on his farm were progressing. He explained that his tenant figured that leveling the land would save at least $10 per acre in cost of the labor of irrigating, would conserve water, and undoubtedly would increase yields. The tenant was willing to share this benefit with the landlord, and volunteered to pay an additional $5 rental if the conservation program was applied immediately. After consulting a Carlsbad banker he decided to go ahead with the work as soon as possible.

LAND-JUDGING CONTEST.—A national contest in land judging and appreciation, conducted along the lines of a livestock-judging contest, will be held in Oklahoma City, May 1 and 2, with every State invited to send a 4-H team, an FFA team, and an adult team of judges.

The contest, first to be held on a national scale, is sponsored by an Oklahoma City radio station, the Oklahoma A. and M. College extension service, State vocational agriculture department, Soil Conservation Service, State Department of Agriculture, and other agricultural agencies and groups.

Land-judging schools have been held in Oklahoma for the past 11 years. The first such school was held in 1941 on the Red Plains Experiment Station at Guthrie, Okla.

Sandy Saunders, WKY farm radio director in Oklahoma City, conceived the idea of holding the land-judging schools on a national basis, and has received fine response from businessmen as well as agricultural workers. Awards will be provided in each of the three separate classes of judging, 4-H, FFA, and adult. Only one team in each division may enter from a county.

He explains the new wrinkle in land judging as a method design which makes it easier for people to look at the land, tell what's the matter with it, learn how to treat it, and keep the soil from washing away.

"The plan was patterned after the livestock people because they had a method of glamorizing the livestock business through their judging contests and shows," says Edd Roberts, extension soil conservationist, who has trained 36,000 people in land-judging and land-appreciation schools in the past 4 years.

Briefly, the system calls for participants to judge four different fields, or pieces of land. They walk about it, examine the contour, topsoil, and slope. They judge the texture, permeability, and other aspects of the soil. They note its depth, its capacity to hold water. They observe the degree of slope, determine the extent of erosion. Finally, they determine the land class, and catalog it according to its capability.

All of these factors are sized up, the contestants make their decisions and check them on sheets of paper with multiple answers, and they are scored, much as a livestock-judging team is scored. The highest scores determine the winners.

"We know they can't become soil scientists or specialists by attending this school or contest," says Roberts, "but it gives the participants an appreciation of the land, what should be done, and what can be done."

Saunders has issued an invitation to all county agents, vocational agriculture teachers, soil conservation workers, veterans teachers, and others to enter the contest, which will be featured on the National Farm and Home Hour broadcast May 3, immediately after the contest closes.

TREE GROWTH SHOWN.—During a meeting of the Society of American Foresters at Seattle, Wash., 75 foresters visited a Douglas fir thinning job near Granite Falls, Wash. In making advance preparations for the tour, SCS foresters realized that the leading question would be, "Are the residual trees growing as fast, faster, or slower than before thinning?"

Ordinarily an increment borer would be used on the spot to check the ring growth before and after thinning. With a group of 75 people, however, this was out of the question since only a few could see the process and the small increment core would be too fragile to pass around so that all could see and grasp the story it told.

Service technicians solved the problem by taking increment cores from a dozen or so trees which were of all crown classes and which had been subjected to varying intensities of thinning. These cores were then spirally wound with transparent scotch tape and mounted on cardboard sheets. Beside each mounted core was placed information describing the tree from which the core came and the stand in which the tree occurred. The completed sheets were then hung on limb stubs of the trees from which the cores came. This arrangement made it possible for the visiting foresters to see, literally, the reaction of the individual trees to the thinning job.

At the time the increment cores were mounted, little thought was given to the possibility of re using them. However, it was later discovered that the mounts have a lasting value. The wrapped cores do not deteriorate rapidly. Six months later they were as fresh looking as when they were extracted. They can be passed around a crowd during group meetings or tours, and in general have proved to be a useful tool in selling forest conservation. Too often people viewing an increment core do not grasp the story which it tells. With full explanations beside the mounted cores, people readily understand the meaning of what they see.

In this instance the distinctive contrast of summer with spring wood made it unnecessary to treat the cores to bring out the annual rings. To adapt the same technique to some other species, it would quite likely be necessary or desirable to stain the cores before wrapping.

—William J. Lloyd.

FARM-WOODS BUSINESS.—The value of wood products has long been recognized, but only recently has farm forestry come into prominence. Technically known as silviculture, the practice involves selecting, cutting, and marketing suitable trees, along with employing the best known methods of conservation to insure future yields of timber. In many respects a farm wood lot is like a garden. It requires trimming and thinning if top quality products and continuous crops are to be harvested.

A few months ago, acting on the suggestion of our local forester, I began considering farm forestry as a career. The future for such work can be estimated from the fact that 45 percent of all wooded areas in the Upper Mississippi Valley and Great Lakes drainage region is located on farms.

The first step in my enterprise is contacting owners of timberland and obtaining their cooperation. I was surprised to find these men quite agreeable to my plans, since some had previously refused to bargain with established sawmill operators. The reason, however, is obvious. In selective cutting, only trees that are damaged or those growing too crowded are removed. Wood lots are therefore improved rather than destroyed. Much valuable information on locating available timber and on marking trees for removal is offered free by the Soil Conservation Service.

When a lease is secured and the necessary cash terms agreed on, the actual work begins. Assisted by one helper, I cut, log, and market my timber. With planned recuttings every 5 to 8 years, I have a steady job, with indeed a growing future.

There are literally dozens of communities where such work might profitably be carried on, and the benefits are threefold. The timber owner profits, a reliable, paying job is afforded at least two men (myself and one other), and productive woodlands are insured for future generations.

—Winston Clark.

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Fish-management class at the ninth annual conservation camp, Webster County, W. Va., on small stream running through grounds. It is taught by Harry Van Metre, assistant chief of the division of fish management, and Robert F. Stephens, fish culturist, Conservation Commission of West Virginia. See page 252, "A Mountain Camp Where Boys and Girls Learn About Conservation." Photos used with this article were made by Hermann Postlethwaite.

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